

CLAIMS

1. A flexible matrix array device comprising a thin film matrix circuit carried on the surface of a flexible substrate which matrix circuit includes semiconductor devices arranged in a regular array and occupying respective, discrete, areas of the substrate, wherein selected regions of the substrate away from the areas occupied by the semiconductor devices comprise areas of weakness at which flexing of the substrate occurs more readily.

2. A curved matrix array device comprising a thin film matrix circuit carried on the surface of a substrate which matrix circuit includes semiconductor devices arranged in a regular array and occupying respective, discrete, areas of the substrate, wherein the substrate comprises areas of weakness at selected regions away from the semiconductor devices and the curvature of the device is accommodated substantially by deformation at the substrate at those regions.

3. A device according to Claim 1 or Claim 2, wherein the areas of weakness comprise locally thinner regions of the substrate.

4. A device according to Claim 3, wherein the locally thinner regions are formed by selective etching of the substrate.

5. A device according to Claim 3, wherein the substrate comprises a laminated structure with at least two layers and in which one layer is patterned to form the locally thinner regions.

6. A device according to Claim 1 or Claim 2, wherein the areas of weakness comprise areas of the substrate at which the material of the substrate is rendered less stiff compared with the areas of the substrate occupied by the semiconductor devices.

7. A device according to any one of Claims 1 to 6, wherein the substrate comprises polymer material.

8. A device according to any one of Claims 1 to 7, wherein the
5 areas of weakness extend as lines of weakness between the areas of the substrate carrying the semiconductor devices.

9. A device according to Claim 8, wherein the semiconductor
10 devices are arranged in an array of rows and columns and wherein the areas of weakness comprise lines of weakness extending across the array between rows and/or columns of semiconductor devices.

10. A device according to any one of Claims 1 to 7, wherein the
15 discrete areas of the substrate carrying the semiconductor devices are thicker than the remaining areas of substrate.

11. A device according to any one of the preceding claims, wherein
the semiconductor devices each comprise a semiconductor film formed into an island.

20 12. A device according to any one of the preceding claims, wherein the semiconductor devices comprises thin film transistors.

13. A device according to any one of the preceding claims, wherein
25 the device comprises an active matrix display devices having an array of display pixels and in which each semiconductor device is connected to a respective pixel electrode carried on the substrate.

14. A device according to Claim 13, wherein the device comprises an
30 active matrix liquid crystal display device which includes a further flexible substrate mounted to the substrate carrying the matrix circuit with liquid crystal material disposed between the substrates.

15. A device according to Claim 14, wherein the further substrate has lines of weakness formed therein.

PHGB 010051 US